Irem Batool and Gernot Sieg

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Address
Institut für Volkswirtschaftslehre
Spielmannstraße 9
D38106 Braunschweig, Germany

Telephone
+49 531 391 2578

Website
http://www.tu-braunschweig.de/vwl

Fax
+49 531 391 2593

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Bread, peace and the attrition of power: Economic events and German election results

Irem Batool*†
Gernot Sieg§*

Abstract

Aggregate votes for incumbent parties in post-war Germany were determined by the weighted-average growth of real per capita disposable income and the attrition of power, especially when the Federal Chancellor sought re-election more than twice. Similar to earlier results for the US, each percentage point of per capita real disposable income growth sustained over the legislative term yielded approximately 4 percentage points in votes in Germany. No other economic variables add value or significantly perturb the coefficients of our model.

Keywords: elections; vote share ; real per capita disposable income growth

JEL: E6, H11, P16

*TU Braunschweig, Economics Department, Spielmannstr. 9, 38106 Braunschweig, Germany. † State Bank of Pakistan. The views expressed in this paper represent exclusively the authors' own opinions and do not necessarily reflect those of the SBP. § Corresponding author

1 Introduction

There may be many reasons for supporting or opposing a government. However, German elections should be viewed as a sequence of referenda on the government's economic record. The growth of real per capita disposable income explains all the variations in aggregate voting outcomes. If a German chancellor sought re-election more than twice, as in 1961, 1994 and 1998, he or she received significantly fewer votes.

Although it is obvious that economic conditions affect voting behavior, there is a large body of literature examining the economic variables that are most important for voter decisions.[1] The main questions are:

1. Are voters backward- (Key 1966) or forward-looking (Downs 1957)?
2. If voters are backward-looking, how far back do they look and how much do they discount past events?
3. Do voters vote according to their pocketbooks or according to the national economic situation (Lewis-Beck 1988)?
4. How does the political system (accountability) affect the importance of economic variables?

We find support for the hypothesis that voters are backward-looking and that they consider the whole legislative term with almost no discounting of past events. They vote according to their pocketbooks, i.e., the per capita disposable income growth. Comparing our results for Germany to those of Hibbs (2008) for the US, we find that additional weighted-average per capita real growth in disposable income results in a similar vote share increase in both countries, even though the US and Germany have different political systems. These results raise questions about some of the stylized facts summarized by Lewis-Beck and Paldam (2000, p. 114). Furthermore, in our estimation, inflation is irrelevant, contrary to stylized fact that inflation and unemployment/growth are relevant for vote functions.

Our approach follows the literature explaining aggregate votes in terms of economic fundamentals. Fair (1978) identifies the change in real economic activity in the year of the election and a high discount rate on past economic performance. Lewis-Beck (1988) argues that voters do not vote on the basis of their own personal economic situation, but rather on the

[1] See Drazan (2000), Hibbs (2006), Nannestad and Paldam (1994) and Mueller (2003) for surveys of the literature.

national economic performance. Hibbs (1982, 2000) identifies the weighted-average growth of real disposable personal income over the complete term of office as the only important economic variable that explains voting in US presidential elections. Whereas authors such as Frey and Garbers (1972), Kirchgässner (1974, 1985) and Frey and Schneider (1979) were pioneers in the field of popularity and policy reaction functions and thoroughly examined Germany, they used popularity rather than election results as the explanatory variable.[2] Obviously, there are not enough data from post-war elections in Germany. However, we explain election results instead of polling results and therefore avoid the problems with polls: they cover fewer persons, do not have real effects and target subjects without advance notice and not after an election campaign.

Whereas the duties of the German federal president are largely representative and ceremonial, power is exercised by the Federal Chancellor ("Bundeskanzler") who heads the Federal Government and thus the executive branch of the political system. He or she is elected by and is responsible to the "Bundestag", Germany's main chamber of parliament, to which members are elected for a 4-year term. In the election voters cast two votes, the first called "Erststimme" and the second "Zweitstimme". The first vote is to elect members of parliament in single-seat constituencies using a first-past-the-post voting system. Aggregated second votes determine the seats a party receives in the Bundestag, although the definite number of seats depends on some special rules.[3] Therefore, the main vote is the second vote because it determines the weight for a party and, indirectly, the chancellor. With just one exception in post-World War II Germany, no single party has ever achieved an absolute majority of seats in the parliament. Therefore, parties join a coalition that elects a member of the largest coalition party as chancellor. These coalitions of parties usually hold for a whole legislative period of 4 years.

[2] Cusack (1999), Feld and Kirchgässner (2000) and Geys and Vermeir(2008) use popularity ratings as well.

[3] 1. A party has to get 5 percent or three seats in single-seat constituencies to get the proportional share. 2. A seat won in a single-seat constituency is guaranteed. 3. The proportional share is calculated with reference to single states.

2 The Model

The bread and peace model (Hibbs 2000) assumes that growth of real disposable personal income per capita is the best single-variable election predictor because real disposable personal income includes income from all market sources and is adjusted for inflation, taxes, government transfer payments, and population growth. It also includes the income effects of unemployment.

To determine the election result we define as vote share the share of votes[4] for parties that were members of the ruling coalition in the legislative period prior to the election. Hibbs (2000) and Fair (1978) use the two-party vote share in their estimations to incorporate the effect whereby there are only two presidential candidates, but sometimes there is a third. They implicitly accumulate votes for the third candidate in proportion to the votes for candidates of the Republican and Democrat parties. This is appropriate for the US, but is not necessary for the proportional system used in Germany whereby a voter who wants to support the government may vote for a small coalition party.

We exclude the 1969 and 1983 election terms. From 1966 to 1969 there was a grand coalition of both large parties and therefore even voters disappointed with economic growth probably voted for one of these parties. In 1983 the government coalition was only in office for 6 months because one party switched the coalition during the term, and therefore a vote for the current government could have been a vote against the low performance of the predecessor.

The equation used to generate the data depicted in Figure 1 is:

$$V_t = \beta_0 + \beta_1 \left(\frac{f_t \Delta \ln R_t + \sum_{j=1}^{l_t} \lambda^j \Delta \ln R_{t-j}}{f_t + \sum_{j=1}^{l_t} \lambda^j} \right) + \beta_2 \mathrm{DUR}, \qquad (1)$$

where

- V is the sum of the vote shares of the parties that make up the governing coalition at the time of election.
- R is the per capita growth in disposable personal income deflated by the consumer price index, and $\Delta \ln R_t$ is the annualized quarter-on-quarter percentage rate of growth, $\Delta \ln R_t = \ln(R_t/R_{t-1}) * 400$ expressed in annualized percentage points (multiplication by 400).

[4] We use the share of valid "Zweitstimmen".

Incumbent vote share V	1972–2005 R^2=0.74	$N = 9$ elections Adj. R^2=0.66	Root MSE=2.99
	Coef. estimate	Std. error	p-value
Constant β_0	46.4	1.81	.0000
Weighted-average per capita real disposable personal income growth rate, % (β_1)	3.09	.98	.0194
Chancellor for re-election more than twice DUR (β_2)	−4.22	2.17	.0998

Table 1: Model equation estimates for quarterly data

- l_t is the number of quarters (years) from the last election to the current election t, excluding the quarter (but not the year) of the previous election.
- f_t is a variable that captures the weight of the election quarter and equals the fraction of elapsed days on election day in that quarter (year) to the number of all days in the quarter (year).
- $f_t + \sum_{j=1}^{l_t} \lambda_j$ is a normalizing constant, so that β_1 registers the response of vote to movements in the weighted average of real income growth rates.
- DUR is a dummy variable that equals 1 only if the chancellor is seeking re-election for the third time (i.e., in 1961 and 1994) and 1.25 if the chancellor is seeking re-election for the fourth time (i.e., in 1998).[5]

The parameters used to draw the trend line in Figure 1 are $\beta_0 = 46.4$, $\beta_1 = 3.09$ (as estimated in Table 1) and $\beta_2 = 0$ because DUR= 0 for most elections. To demonstrate the attrition of power effect in 1994 and 1998, the predicted vote shares for these years (using the estimated DUR variable) are indicated by triangles.

[5]Before 1990 people from East Germany were not allowed to cast their vote for the Bundestag because the former GDR (East Germany) was an independent state. Therefore, in 1994 chancellor Kohl sought re-election for the third time in the former West Germany (approximately 83 percent of the voters) but for the first time in East Germany (approximately 17 percent of the voters). However, weighting the DUR variable for 1994 and 1998 to incorporate the reunification of Germany does not change our results.

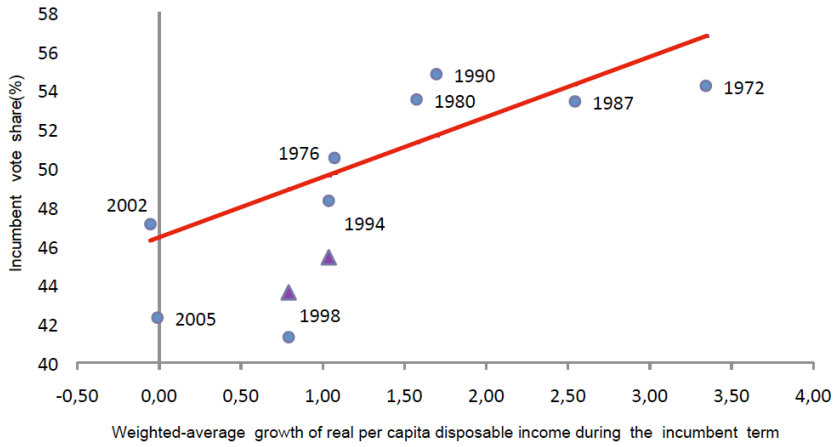

Figure 1: Weighted-average real per capita growth in disposable income and vote share of the incumbent party during 1972–2005 (quarterly data).

Because quarterly data for per capita disposable personal income are not available prior to 1970, we used yearly data to calculate Figure 2. The results are shown in Table 2.

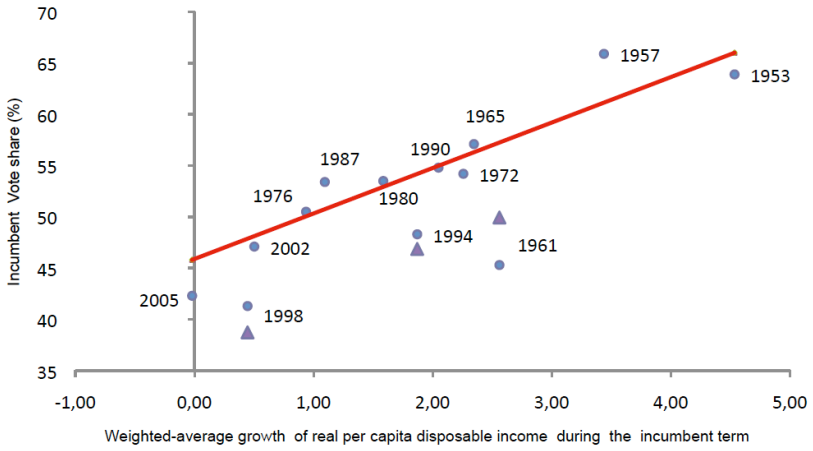

Figure 2: Weighted-average real per capita growth in disposable income and vote share of the incumbent party during 1953–2005 (yearly data).

Incumbent vote share V	1953–2005 R^2=0.88	$N = 13$ elections Adj. R^2=0.85	Root MSE=2.85
	Coef. estimate	Std. error	p-value
Constant β_0	45.9	1.53	.0000
Weighted-average per capita real disposable personal income growth rate, % (β_1)	4.44	.65	.0000
Chancellor for re-election more than twice DUR (β_2)	−7.33	1.74	.0018

Table 2: Model equation estimates for yearly data

In Germany, from a constant of 45.9 percent, each percentage point of per capita real growth in disposable income sustained over the legislative term yields 4.44 percentage points in votes. Even though the political systems of the US and Germany are quite different, the parameter estimates are astonishingly similar to the results of Hibbs (2000, 2008) and even Kramer

(1971).[6]

If the economy expands at a rate equal to the post-war average (1.67 percent), the incumbent coalition may expect a vote share of 53.31 percent. There is a bias that favors the parties in power. Table 4 in the Appendix shows that the largest prediction errors occur for 1957, 1961, and 2005. In the 1961 election one of the opposition parties (FDP) campaigned to enter a coalition with the incumbent party but to get rid of the incumbent chancellor, and obtained a vote share approximately corresponding to the sum of the prediction error and the attrition of power effect. The election in 2005 was early because the chancellor had lost a vote of confidence.

The only minor difference between the data for the US and Germany is the weighting parameter λ. In our estimates, $\lambda = 0.99$ provides the best results in terms of goodness of fit, whereas Hibbs (2008) used a value of 0.909. However, Hibbs (2000) cannot reject the $\lambda = 1$ hypothesis and our estimates generate similar results if we use the λ values used by Hibbs (2000, 2008).

The bread and peace model is of significance not only because it identifies fundamentals that are important for election results, but also because it makes it clear that no other variable adds value or significantly perturbs its coefficients. Furthermore, Hibbs (2008) explains election outcomes in terms of objectively measured political-economic fundamentals and does not use dummy variables that are coded arbitrarily. However, the argument that voters eventually tire of a politician or a party cannot be rejected (Abramowitz 1988, Campbell and Wink 1990, Haynes and Stone 1994), especially for the German elections 1961 and 1998. Therefore it is not surprising that attrition of power is an additional variable explaining German election results. Fair (1996, p. 95) uses a duration variable DUR that increases by $k = 0.25$ for each additional consecutive term of office for a party, starting with a value of 1 if the party has been in power for three consecutive terms. However, we define DUR in terms of the chancellor rather than the party or coalition in office. The US president is not prone to the same attrition of power as a German chancellor because the US president can be re-elected just once, whereas a German chancellor can hold office as long as his or her coalition wins majorities.

On the other hand it is impossible to identify a peace effect in Germany. The number of German military fatalities due to unprovoked, hostile deploy-

[6] In his seminal paper, Kramer (1971) estimates a 4–5 percentage point increase in the vote share for each percentage point rise in the real income growth rate in the election year. Kramer uses a different time span (pre-election year versus the whole legislative period) and a different explanatory variable.

ment of German armed forces in foreign conflicts not sanctioned by a formal parliamentary declaration of war, which is the Hibbs (2008) definition of the peace variable, is zero for the whole period. Fair (1996) also corrects for war years, but defines war elections as dominated by World War I or II. The period in the present study does not cover this time. To summarize, it is impossible to confirm the peace part of the bread and peace model for Germany, arguably because peace is so important to German voters that no chancellor has dared to send troops to intervene in foreign civil wars or to authorize military forces without parliamentary approval.

3 Variables omitted

To test the robustness of the estimated model, we investigated a number of variables other than disposable income growth and duration that are highlighted in the literature on vote shares. The results of these regression experiments are shown in Table 3. The second column of each row reports parameter estimates, t-ratios and significance levels (p-values) for the additional test variable. The third column gives the significance level for the null hypothesis of parameter equivalence between the bread, peace and attrition of power model coefficients obtained for each test regression equation and the corresponding bread and peace estimates in Table 1.[7]

Old news In our model we assume that backward-looking voters review the whole election period but ignore economic growth that occurred earlier. Therefore, we have to test if economic performance prior to the last election influences the voting decision in the current election. As in Hibbs (2000), we use the lagged incumbent parties vote share, which summarizes the economic performance of the pre-pre-election period, termed "old news", as the test variable. The coefficient estimate of old news reveals that there is no spillover effect of past performance of incumbent parties on current vote share. The coefficient estimate for the vote share of the incumbent party in the previous election is essentially zero and the p-value for the hypothesis of joint parameter equivalence is 0.42.

Inflation and unemployment From the beginning of voting economics, inflation and unemployment have been the most popular measures of performance of incumbents parties and voters since they benefit and

[7] Quarterly data are not available prior to 1970, and therefore the model robustness tests are based on the data set for 1972–2005.

punish the government, respectively. Here we included the weighted average inflation and weighted average unemployment over the term as an additional variable. Both variables were not significant and did not add value to the earlier estimated model in Table 1. Similarly, a change in unemployment is redundant, with a non-significant t-value, and a p-value of 0.99 shows the parameter equivalence to the estimates in Table 1.

Fair's economy Test variables 5,6 and 7 are Fair's three well-known variables: $g3$, the average growth rate of real per capita GDP in the first three quarters of the election year; p, the absolute value of inflation over the election term; and n-good, the number of "good news" quarters during the term in which annual GDP growth exceeds potential GDP growth, which we calculate using a Rodrick-Prescott 100 filter.[8] The result demonstrates that these three variable adds no explanatory power to the estimated regression. However, the "good news" variable is significant if we define a reference value to make it significant or define it as the number of quarters in which GDP growth is higher than average growth.[9] Test regressions 5, 6 and 7 demonstrate that the Fair variables do not add any value to the Germany bread and peace model.

Macroeconomic volatility In the literature (Cameron 1978, Rodrik 1999) the macroeconomic stability of economic wellbeing is identified as another important variable for democratic political outcomes. Following Hibbs (2000) we tested volatility as the standard deviation of disposable income growth over the term in test regression 8. Volatility was also insignificant and the p-value demonstrates parameter equivalence to the coefficient estimates in Table 1. We also tested volatility based on inflation, but again obtained insignificant results.

Fiscal conservatism Pelzman (1992) found that each percentage point of growth in real federal spending per capita sustained for a year decreases the vote share of the incumbent party in presidential elections by more than 3 percentage points. The reason is that voters realize

[8] Since GDP growth patterns in Germany are dynamic over time in the sense that average growth was approximately 2.64 before reunification in 1991 and approximately 1.75 thereafter, we have incorporated the concept of good-news quarters as quarters with growth greater than potential output growth.

[9] Fair uses a reference value of 3.2 (and 2.9 in some cases) without reference to fundamentals, but only to obtain a better fit.

that additional fiscal expenditure will create excess tax burdens on them. Test regressions 9 and 10 demonstrate that cumulative changes in real per capita expenditure over the term and cumulative changes in government spending in proportion to GDP had no significant impact on the vote share of the incumbent coalition.

Changes in wealth: Stock prices Fama (1990) and Schwert (1990) propose that stock price change is a common indicator of investor market sentiment and forward macroeconomic expectations. Gleisner (1992) and Haynes and Stone (1994) report that each percentage point increase in the Dow Jones Industrial Average registered between January and October of the election year yields a vote share harvest of between 0.4 and 0.7 percentage points for the incumbent party's presidential candidate. To test the sensitivity of vote share to market sentiments and macroeconomic expectations, we used the DAX30 index. Conditioned on the estimated bread and peace model test regression 11, we find that stock price changes have no significant impact on the vote share of the incumbent coalition.

Interest rate spread Forward-looking voters may use interest rate spread as a predictor of output changes in advance (Estrella and Hardouvelis 1991, Estrella and Mishkin 1997), i.e., they expect that the higher the interest rate spread, the higher will be future output growth and lower will be the future probability of a recession. The argument is endorsed by Berry et al. (1996), who find evidence that interest rate spread affects employment, growth and inflation, which in turn directly or indirectly affects voter behavior. Combining forward-looking voters and interest spread as an indicator of future growth, it follows that the higher the interest rate spread, the higher would be the vote share of the incumbent's party. In the present study, interest rate spread is calculated as the difference between the long-term (10-year) bond yield and the short-term bond yield (bonds with a 1-year maturity period). Test regression results 12 shows that interest rate spread has no significant impact on the estimated vote share in Table 1.

Model: $V_t = \beta_0 + \beta_1 \left(\frac{f_t \Delta \ln R_t + \sum_{j=1}^{l_t} \lambda^j \Delta \ln R_{t-j}}{f_t + \sum_{j=1}^{l_t} \lambda^j} \right) + \beta_2 \text{DUR} + \beta_3 \text{test variables}$

	Test variable(s)	Test variable parameter estimates (t-ratio/ signif. level)	Signif. level for equivalence of $\hat{\beta}_0, \hat{\beta}_1, \hat{\beta}_2$ to benchmark estimates in Table 1 row 1
1.	Old news (Incumbent coalition's vote share at last election)	0.5 (1.83/0.12)	0.42
2.	Inflation	0.79 (0.46/0.66)	0.98
3.	Unemployment rate	−0.20 (−0.46/0.65)	0.97 0.99
4.	Change in unemployment	−0.30 (−0.48/0.65)	0.99
5.	Election year output growth	0.35 (0.58/0.58)	0.97
6.	Inflation over the term	0.15 (0.88/0.42)	0.89
7.	Number of high-growth quarters, good news	0.68 (1.15/0.30)	0.74
8.	Volatility (standard deviation) of $\Delta \ln R$ over the term	0.065 (0.07/0.94)	0.99 0.99
9.	Per capita real govt. expenditure over the term	0.02 (0.09/0.93)	1.0
10.	Govt. expenditure in proportion to GDP over the term	0.04 (0.10/0.92)	1.0 1.0
11.	Stock prices: percent change in DAX30 for 10 months prior to the election month	−0.17 (−1.77/0.13)	0.81
12.	Average yield spread (10-year bonds rate minus 1-year bond rate) during the 3 months following the election	−1.03 (−0.65/0.54)	0.95

Table 3: Robustness of the model to additional variables

4 Conclusions

In Germany, the votes in general elections are determined by the weighted-average growth of real per capita disposable income during the election term. A coalition of parties that offer average growth during the term earn a vote share of 53.3 percent and each additional percentage point of growth adds 4.44 percentage points of votes. This result coincides with the Hibbs (2000, 2008) bread and peace model for US presidential elections. However, a Hibbs (2000) type of peace effect is absent, arguably because peace is so important to German voters that no chancellor has dared to send troops to intervene in foreign civil wars or to authorize military forces without parliamentary approval. Furthermore, in the 1961, 1994 and 1998 elections, the vote share was significantly lower because the chancellor was seeking re-election more than twice and was a victim of the attrition of power effect. The estimated results reveal that the incumbent coalition's vote share is squeezed by 4.21 and 5.26 percent if the chancellor seeks re-election for the third and fourth times, respectively. This result coincides with the Fair (1996) "duration" effect and the time-for-change effect in Abramowitz (1988, 2001). As in Hibbs (2000), all other economic variables do not add value or significantly perturb the equation's coefficients.

Appendix

Election Year	Incumbent parties	% incumbent parties	% predicted vote	Prediction error	Weighted average real income growth	real income growth effect on votes	Attrition of power	Attrition of power effect on votes
1953	CDU/FDP/GB/DP	63.9	66.01	2.11	4.53	20.13	0	0
1957	CDU/FDP/GB/DP	65.9	61.17	−4.73	3.44	15.26	0	0
1961	CDU	45.3	49.94	4.64	2.56	11.37	1.00	−7.33
1965	CDU/FDP	57.1	56.33	−0.77	2.35	10.42	0	0
1972	SPD/FDP	54.2	55.93	1.73	2.26	10.02	0	0
1976	SPD/FDP	50.5	50.07	−0.43	0.94	4.16	0	0
1980	SPD/FDP	53.5	52.91	−0.59	1.58	7.04	0	0
1987	CDU/FDP	53.4	50.73	−2.67	1.09	4.86	0	0
1990	CDU/FDP	54.8	55.00	0.20	2.05	9.10	0	0
1994	CDU/FDP	48.3	46.87	−1.43	1.87	8.30	1.00	−7.33
1998	CDU/FDP	41.3	38.73	−2.57	0.45	1.98	1.25	−9.16
2002	SPD/Grüne	47.1	48.11	1.01	0.50	2.23	0	0
2005	SPD/Grüne	42.3	45.80	3.50	-0.02	-0.09	0	0

Table 4: Votes, predictions and effects of fundamental determinants in German elections (fits and effects computed from equation estimates in Table 2.)

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